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10/814,116	03/31/2004	Alan K. Prichard	030048128US	5148

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EXAMINER	
FERGUSON, MICHAEL P	

ART UNIT	PAPER NUMBER
3679	

DATE MAILED: 07/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/814,116	PRICHARD, ALAN K.	
	Examiner	Art Unit	
	Michael P. Ferguson	3679	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29,31-45 and 47-50* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29,31-45 and 47-50* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 29, 2006 has been entered.

Drawings

2. The drawings are objected to because of the following:

Figures 1-5 fail to have proper cross-hatching for any of the numerous cross-sectioned elements.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Further, there are no longer any method claims and therefore reference to methods in the abstract should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 29,31-39,41-45,47,49 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gapp et al. (US 3,848,389) in view of Arulf et al. (US 6,913,225).

As to claims 29 and 34, Gapp et al. disclose a system of joined structures, comprising:

a first structure **1** having a first aperture, the first aperture having a first interior surface and a first minimum radial extent;

a second structure **2** having a second aperture in a metallic material (metallic cross-section; Figure 1), the second aperture having a second interior surface and a second minimum radial extent at least approximately the same as the first minimum radial extent; and

a coupling device **4** having a first shank section **9** extending through the first aperture and a second shank section **8** extending through the second aperture, but not extending into the first aperture, the first section of the coupling device having at least one of a hardness, toughness, and density greater than that of the second shank section of the coupling device, and wherein a portion of the second shank section has a greater radial extent than the first shank section (Figure 1, column 2 lines 27-30);

wherein the portion of the second shank section **8** applies a first radial force to the second interior surface and the first shank section **9** applies at least approximately no radial force to the first interior surface (column 2 lines 27-30); and

the material proximate to the fist aperture is undamaged (Figure 1).

Gapp et al. fail to disclose a system wherein the first structure is a composite material; wherein the composite material includes a carbon fiber material; and wherein the second structure is aluminum.

Arulf et al. teaches a system wherein a first structure **3,4** is a composite material, the composite material configured so that a small radial force to the first internal surface will damage the composite material; wherein the composite material includes a carbon fiber material, and a second structure **5** is aluminum; the carbon fiber material and aluminum providing for lightweight structures with high strength and rigidity (Figure 1, column 1 lines 19-33, column 3 lines 45-54). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system as disclosed by Gapp et al. to have a first structure made of a composite material, and a second structure made of aluminum as taught by Arulf et al. in order to provide for lightweight structures with high strength and rigidity.

As to claim 31, Gapp et al. disclose a system wherein the first shank section **9** is not in contact with the first interior surface (Figure 1, column 2 lines 27-30).

As to claim 32, Gapp et al. disclose a system wherein the coupling device includes a rivet **4** (Figure 1).

As to claim 33, Gapp et al. disclose a system wherein the coupling device **4** includes a metallic material.

As to claim 35, Gapp et al. disclose a system wherein the first shank section **9** of the coupling device **4** is connected to a head **3**, and wherein the first aperture includes a countersunk portion for receiving the head (Figure 1).

As to claim 36, Gapp et al. disclose a system wherein the first shank section **9** of the coupling device **4** is connected to a head **3**, and wherein the head has a radial extent greater than a radial extent of at least a portion of the first aperture (Figure 1).

As to claim 37, Gapp et al. disclose a system wherein the second shank section **8** of the coupling device **4** is connected to a tail **7**, the tail extending out of the second aperture, the tail having a radial extent greater than a radial extent of at least a portion of the second aperture (Figure 1).

As to claim 38, Gapp et al. disclose a system wherein:

the first shank section **9** of the coupling device **4** is connected to a head **3**, the head having a radial extent greater than a radial extent of at least a portion of the first aperture; and

wherein the second shank section **8** of the coupling device is connected to a tail **7**, the tail extending out of the second aperture, the tail having a greater radial extent than a radial extent of at least a portion of the second aperture (Figure 1).

As to claim 39, Gapp et al. disclose a system wherein:

the first shank section **9** of the coupling device **4** is connected to a head **3**, the head having a radial extent greater than a radial extent of at least a portion of the first aperture; and

wherein the second shank section **8** of the coupling device is connected to a tail **7**, the tail extending out of the second aperture, the tail having a greater radial extent than a radial extent of at least a portion of the second aperture; and wherein the first and second structures are clamped together by the head and the tail (Figure 1).

As to claim 41, Gapp et al. disclose a system comprising a vehicle, and wherein the coupling device, the first structure, and the second structure are installed in the vehicle (column 1 lines 8-11).

As to claims 42 and 44, Gapp et al. disclose a system of joined structures, comprising:

a first structure **1** having a first aperture, the first aperture having a first interior surface and a first minimum radial extent;

a second structure **2** having a second aperture in a metallic material (metallic cross-section; Figure 1), the second aperture having a second interior surface and a second minimum radial extent at least approximately the same as the first minimum radial extent; and

a coupling device **4** having a first shank section **9** extending through the first aperture and a second shank section **8** extending through the second aperture, but not extending into the first aperture, the first shank section of the coupling device having at least one of a hardness, toughness, and density greater than that of the second shank

section of the coupling device, and wherein a portion of the second shank section applies a first radial force to the second interior surface and the first shank section applies at least approximately no radial force to the first interior surface (Figure 1, column 2 lines 27-30).

Gapp et al. fail to disclose a system wherein the first structure is a composite material; wherein the composite material includes a carbon fiber material; and wherein the second structure is aluminum.

Arulf et al. teaches a system wherein a first structure **3,4** is a composite material, the composite material configured so that a small radial force to the first internal surface will damage the composite material; wherein the composite material includes a carbon fiber material, and a second structure **5** is aluminum; the carbon fiber material and aluminum providing for lightweight structures with high strength and rigidity (Figure 1, column 1 lines 19-33, column 3 lines 45-54). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system as disclosed by Gapp et al. to have a first structure made of a composite material, and a second structure made of aluminum as taught by Arulf et al. in order to provide for lightweight structures with high strength and rigidity.

As to claim 43, Gapp et al. disclose a system wherein the portion of the second shank section **8** has a greater radial extent than the first shank section **9** (Figure 1, column 2 lines 27-30).

As to claims 45 and 49, Gapp et al. disclose an aircraft, comprising:

a first structure **1** having a first aperture, the first aperture having a first interior surface;

a second structure **2** having a second aperture in a metallic material (metallic cross-section; Figure 1), the second aperture having a second interior surface, the first aperture having a minimum radial extent at least approximately the same as a minimum radial extent of the second aperture; and

a coupling device **4** having a first shank section **9** extending through the first aperture and a second shank section **8** extending through the second aperture, but not extending into the first aperture, the first shank section of the coupling device having at least one of a hardness, toughness, and density greater than that of the second shank section of the coupling device, and wherein a portion of the second shank section has a greater radial extent than the first shank section (Figure 1, column 2 lines 27-30);

wherein the portion of the second shank section **8** applies a first radial force to the second interior surface and the first shank section **9** applies at least approximately no radial force to the first interior surface (column 2 lines 27-30); and

the material proximate to the fist aperture is undamaged (Figure 1).

Gapp et al. fail to disclose an aircraft wherein the first structure is a composite material; wherein the composite material includes a carbon fiber material; and wherein the second structure is aluminum.

Arulf et al. teaches an aircraft wherein a first structure **3,4** is a composite material, the composite material configured so that a small radial force to the first internal surface will damage the composite material; wherein the composite material

includes a carbon fiber material, and a second structure **5** is aluminum; the carbon fiber material and aluminum providing for lightweight structures with high strength and rigidity (Figure 1, column 1 lines 19-33, column 3 lines 45-54). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the aircraft as disclosed by Gapp et al. to have a first structure made of a composite material, and a second structure made of aluminum as taught by Arulf et al. in order to provide for lightweight structures with high strength and rigidity.

As to claims 47 and 50, Gapp et al. disclose an aircraft, comprising:

a first structure **1** having a first aperture, the first aperture having a first interior surface and a first minimum radial extent;

a second structure **2** including a metallic material (metallic cross-section; Figure 1), the second structure having a second aperture in the metallic material, the second aperture having a second interior surface and a second minimum radial extent at least approximately the same as the first minimum radial extent; and

a coupling device **4** having a first shank section **9** extending through the first aperture and a second shank section **8** extending through the second aperture, but not extending into the first aperture, the first shank section of the coupling device having at least one of a hardness, toughness, and density greater than that of the second shank section of the coupling device, wherein:

a portion of the second shank section has a greater radial extent than the first shank section so that the portion of the second shank section applies a first radial force

to the second interior surface and the first shank section applies at least approximately no radial force to the first interior surface (Figure 1, column 2 lines 27-30); and wherein:

the material proximate to the fist aperture is undamaged; and wherein:

the first shank section of the coupling device is connected to a head **3**, the head having a radial extent greater than a radial extent of at least a portion of the first aperture; and

wherein the second shank section of the coupling device is connected to a tail **7**, the tail extending out of the second aperture, the tail having a greater radial extent than a radial extent of at least a portion of the second aperture (Figure 1, column 2 lines 27-30).

Gapp et al. fail to disclose an aircraft wherein the first structure is a composite material; wherein the composite material includes a carbon fiber material; and wherein the second structure is aluminum.

Arulf et al. teaches an aircraft wherein a first structure **3,4** is a composite material, the composite material configured so that a small radial force to the first internal surface will damage the composite material; wherein the composite material includes a carbon fiber material, and a second structure **5** is aluminum; the carbon fiber material and aluminum providing for lightweight structures with high strength and rigidity (Figure 1, column 1 lines 19-33, column 3 lines 45-54). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the aircraft as disclosed by Gapp et al. to have a first structure made of a

composite material, and a second structure made of aluminum as taught by Arulf et al. in order to provide for lightweight structures with high strength and rigidity.

6. Claims 40 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gapp et al. in view of Arulf et al. as applied to claims 29 and 47 above, and further in view of Bannink, Jr. (US 4,556,591).

As to claim 40, Gapp et al. in view of Arulf et al. fail to disclose a system comprising a sealant proximate to the coupling device.

Bannink, Jr. teaches a system comprising a sealant **30** proximate to a coupling device **28**; the sealant providing a non-conductive connection between first and second structures **16,18** and preventing corrosion of the coupling device (Figure 2, column 4 lines 25-29). Accordingly, it would have been obvious for one having ordinary skill in the art at the time the invention was made to have modified the system as disclosed by Gapp et al. in view of Arulf et al. to have a sealant as taught by Bannink, Jr. in order to providing a non-conductive connection between first and second structures and to prevent corrosion of the coupling device.

As to claim 48, Gapp et al. in view of Arulf et al. fail to disclose an aircraft comprising a sealant proximate to the coupling device.

Bannink, Jr. teaches a system comprising a sealant **30** proximate to a coupling device **28**; the sealant providing a non-conductive connection between first and second structures **16,18** and preventing corrosion of the coupling device (Figure 2, column 4 lines 25-29). Accordingly, it would have been obvious for one having ordinary skill in the art at the time the invention was made to have modified the aircraft as disclosed by

Gapp et al. in view of Arulf et al. to have a sealant as taught by Bannink, Jr. in order to providing a non-conductive connection between first and second structures and to prevent corrosion of the coupling device.

Response to Arguments

7. Applicant's arguments filed June 29, 2006 have been fully considered but they are not persuasive.

As to claims 29,42,45 and 47, Attorney argues that:

Gapp et al. in view of Arulf et al. does not disclose a system *wherein the first structure is a composite material; wherein the composite material includes a carbon fiber material; and wherein the second structure is aluminum.*

Examiner disagrees. As to claims 29,42,45 and 47, Arulf et al. teaches a system wherein a first structure **3,4** is a composite material, the composite material configured so that a small radial force to the first internal surface will damage the composite material; wherein the composite material includes a carbon fiber material, and a second structure **5** is aluminum; the carbon fiber material and aluminum providing for lightweight structures with high strength and rigidity (Figure 1, column 1 lines 19-33, column 3 lines 45-54). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system as disclosed by Gapp et al. to have a first structure made of a composite material, and a second structure made of aluminum as taught by Arulf et al. in order to provide for lightweight structures with high strength and rigidity.

As to claims 29,42,45 and 47, Attorney argues that:

Arulf et al. *teaches away from using a rivet to join carbon fiber material to an aluminum material.*

Examiner disagrees. As to claims 29,42,45 and 47, Examiner notes that Arulf et al. teach only the use of carbon fiber material with an aluminum material. Arulf et al. disclose the use of carbon fiber material with aluminum material in order to provide for lightweight structures with high strength and rigidity (Figure 1, column 1 lines 19-33, column 3 lines 45-54). Furthermore, Arulf et al. teach that carbon fiber material and aluminum material may be joined by bolts, threaded fasteners, glue or any other equivalent fastening means, such as rivets.

As to claims 29,42,45 and 47, Attorney argues that:

Gapp et al. teaches away from a rivet that does not completely fill both holes in the structures being joined, such as the prior art shown in Figure 1 of Gapp et al.

Examiner disagrees. Gapp et al. disclose such rivets, as shown in Figure 1 of Gapp et al., as known prior art. Accordingly, one of ordinary skill in the art is able use such rivets in the known manner; and such prior art is capable of being modified by one having ordinary skill in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Ferguson whose telephone number is (571)272-7081. The examiner can normally be reached on M-F (8:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel P. Stodola can be reached on (571)272-7087. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MPF
07/11/06

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